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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/739,406 | 12/18/2000 | Weiyu Fan | 11936.6US11 | 2546 |

7590 01/24/2003

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EXAMINER

DEWITTY, ROBERT M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1616

DATE MAILED: 01/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/739,406

Applicant(s)

FAN ET AL.

Examiner

Robert M DeWitty

Art Unit

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-31 is/are pending in the application.
- 4a) Of the above claim(s) 18-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims 7-31 are pending in the instant application. Claims 18-31 are withdrawn as being drawn to non-elected invention. Acknowledgement is made of Applicant's response submitted 12/14/02.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsugita (U.S. Pat. No. 4,983,304), further in view of Okaga (U.S. Pat. No. 5,905,035).

Okaga relates to extracting chitin from *Mucoriopsis ellipsoidus*. It is taught that commercial uses for chitin and chitosan include pharmaceuticals, agriculture, cosmetics, food additives, and separations (col. 1, lines 39-45). Extraction of chitin from fungi provides a controllable route to get a purer and more consistent chitin than obtained from shellfish waste (col. 2, lines 6-17). Okaga teaches that generally, chitosan polysaccharides are 80% deacetylated (col. 1, lines 32-34), but does not teach deacetylation at a rate of over 85%.

Tsugita relates to a membrane composed of a chitosan having a deacetylation degree adjusted to 80 to 95% and having a molecular weight of 80,000 to 150,000 (Abstract). The membrane would be used for separation technology, such membrane being excellent in selective water permeability (col. 2, lines 24-30). Chitosan is prepared by deacetylating chitin.

Motivation to utilize fungi to produce a membrane for separation made of chitosan would have arisen because fungi are known to provide purer and more consistent chitin than shellfish waste. In the field of separation technology, one would have been motivated to utilize chitosan having a deacetylation degree from 80 to 95% in the membrane in order to obtain a membrane with excellent selective water permeability. It is the examiner's position that a deacetylation degree from 80 to 95% also includes deacetylation degrees greater than 85%.

Response to Arguments

2. Based on Applicant's arguments regarding the previous rejection under 102(b) to Tsugita, the previous rejection is withdrawn. Most notably, whereas Tsugita teaches a range which incorporates "greater than 85% deacetylation", Tsugita does not explicitly contain such teaching.

3. Regarding the rejection under 103, Applicant's arguments have been fully considered but they are not persuasive. Applicant asserts that Tsugita does not teach chitosan "greater than 85% deacetylated". However, Tsugita clearly teaches using a chitosan between 80-95% deacetylated. It is the examiner's position that greater than 85% deacetylation is within the range taught. Further, Okada discusses the general nature of the chitin polysaccharide (80% deacetylation). Based on Tsugita's teaching that chitosan with deacetylation between 80-95% delivers excellent selective water permeability, the selection of chitosan with deacetylation greater than 85% is mere optimization of the invention and would have been within the skill of one in the art.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

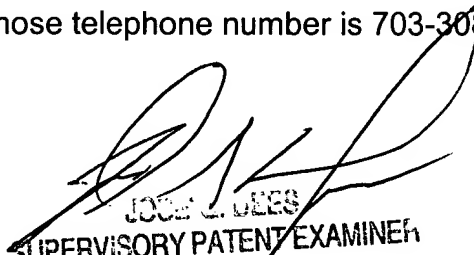
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert M DeWitty whose telephone number is 703-308-2411. The examiner can normally be reached on 9:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jose Dees can be reached on 703-308-4527. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7924 for regular communications and 703-308-7924 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

RMD
January 13, 2003


JOSE C. DEES
SUPERVISORY PATENT EXAMINER
1616